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ABSTRACT

The primary purpose of this study was to develop a proposed conceptual framework for a semester course in nutrition and foods for vocational home economics at the secondary level. A questionnaire was developed and sent to three groups of Texas educators: homemaking teachers, teacher educators, and nutrition professors. The instrument obtained responses relative to values placed on concepts for nutrition education. Analysis of variance and Duncan's procedure were used to determine variance among means of the groups. The educators agreed on the value of the majority of concepts presented. Where significant differences occurred, homemaking teachers and teacher educators had similar values that differed from those of nutrition professors. Nutrition professors placed high values on concepts relating to basic nutrition, whereas homemaking teachers and teacher educators placed high values on concepts dealing with food preparation skills. Recommendations were made for updating the nutrition knowledge of homemaking teachers and providing them with assistance in planning and resources for conducting one-semester courses in foods and nutrition. (The conceptual framework developed during this research is included as a curriculum guide in an appendix to the report.) (Author/KC)

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FINAL REPORT

Project Number 22420022

NUTRITION EDUCATION IN VOCATIONAL HOME ECONOMICS

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Finally, the project could not have been conducted without the help of the many Homemaking teachers, nutrition educators, and teacher educators throughout the state who completed the questionnaires and shared their experiences with us.

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CHAPTER I

INTRODUCTION

The research project, "Nutrition Education in Vocational Home Economics," evolved due to the perceived need for more effective nutrition education in secondary schools. A proposal was developed and submitted to the Texas Education Agency in 1981. After the approval of the proposal, the research began in September, 1981.

Statement of Need

The importance of nutrition education has long been recognized by educational leaders. Among official bodies which have stated that need are recent groups as well as early leaders. As long ago as 1918 the famous Seven Cardinal Principles of Education included a statement on the importance of maintaining physical health (23). In 1944 the National Education Association's Educational Policy Commission listed one of the ten imperative needs of youth as the development of good health, physical fitness, and mental health (19). More important for today's youth are the Goals for Public School Education in Texas which were adopted by the State Board of Education in 1970 and revised in 1973. One of those goals clearly states the need for students to be prepared to "achieve physical and environmental health and ecological balance" (22). As a result of these recognized needs, schools have included activities for physical education, but have often omitted

education relative to nutrition, which authorities view as an aspect of health as important to well-being as is physical activity.

The need for in-depth nutrition education for individuals of all ages was recently cited by Ruth Huenemann, School of Public Health, University of California (8). Dr. Huenemann urged combined efforts of professionals to provide nutrition education for all the American people. She stated, however, that teachers of nutrition "should be responsible for leadership in the direction of efforts to provide nutritious food for the world's population."

Assistant Secretary for Health and Surgeon General Julius Richmond (15) has reminded Americans that the 1979 Surgeon General's report reaffirmed our national committment to promoting health through improved nutrition. He spoke of the obligation of education to help people make food choices that will reduce their risk of heart disease, stroke, cancer, and diabetes. "There are," he concluded, "great opportunities for us to help people improve their nutritional knowledge through school curricula, and others."

Esther Peterson (14) who has served the president as Special Assistant for Consumer Affairs, emphasized that nutrition must be taught in an applied sense. "We cannot," she said, "treat nutrition education as an abstraction...we don't have a choice. Either we give the best information...or we allow those who claim they know and do not, such as the faddists, to move in and take over even more of the fields...." She concluded that the president is committed to better public service in nutrition and nutrition education.

Dr. Hazel Spitze (18), profile writer in the field of home economics, has written in The Journal of Home Economics assigning top

priority to nutrition education as an element of family life education. She stated that nutrition education must be provided if home economics is to continue to be a relevant subject for high school students. She noted that the Commissioner of the Food and Drug Administration has emphasized the need for national strategies focusing on nutrition education. Spitze also stressed the need for research, new technology, and consumer participation.

In 1973, the American Dietetic Association published a position paper on nutrition education for the public. Among their recommendations were that:

1. Nutrition education be identified as a part of every program that educates for personal, family, and community health.
2. Consumers participate in defining their expectations and needs for nutrition information which can be met by nutrition education.
3. Persons who conduct nutrition education should be qualified by specific training in human nutrition and educational techniques.
4. Nutrition education with adequate funding be a regular part of the training of (a) teachers, (b) medical and dental professions, (c) allied health personnel.
5. The Association and members participate in the planning of emerging nutrition education programs and the coordination of existing ones (25).

Echoing these professional declarations, in recent years nutrition education has become a public concern. As lay people have increased awareness levels of the contribution nutrition can make toward quality of life, demand for information has greatly increased. In response to such demands, Public Law 95-166 was passed in 1977, authorizing states to spend 50 cents per child in federal funds for nutrition education in the schools. One and a half million dollars was awarded

to Texas for such education (22). With interest and funds available to promote nutrition education, administrators and teachers are seeking effective vehicles for providing information for students.

A recent survey of nutrition education provided to Texas public school students showed that a significantly greater amount of nutrition education is being provided through homemaking classes than through any other subject area (6). The study revealed that 53.8 percent of high school students receive nutrition education in some form. Among classes in health, biology, and homemaking there was a significant difference in amounts of time given to teaching nutrition. Analysis of data showed that biology and health teachers tended to spend from two to five class periods teaching nutrition, while homemaking teachers spent 20 or more periods on the topic. In addition, a greater percentage of students in homemaking classes received nutrition education than did students in biology or health. It was found that a significantly greater number of vocational homemaking teachers had formal training in nutrition than did other teachers providing nutrition education. A further aspect of the study revealed that lecture was the dominant teaching technique used in nutrition classes. With almost fifty percent (46.2) of students in Texas schools receiving no nutrition education, the need for assistance to teachers and the need to augment nutrition education programs is evident.

The purpose of this study was to develop major concepts in nutrition education appropriate for use in secondary education and to assist vocational homemaking teachers in developing a more in-depth instructional program of nutrition education. A further aspect of this study is related to techniques for effectively teaching nutrition.

While nutrition education has always been a part of vocational home economics programs, it has been provided only through the comprehensive courses of Homemaking I, II, and III. The present outline for time assigned to the teaching of nutrition (combined with foods) traditionally has been from five to eight weeks (21). Such a limited time frame has produced a severe problem for teachers who seek to provide adequate information on nutrition. If a semester course is available for nutrition and foods, nutrition education can be provided more effectively to students. In addition, a semester course will provide an interesting and demanded option for the student who desires nutrition education but who will not elect a comprehensive homemaking course in order to get the nutrition and foods information.

Objectives

The focus of this study, "Nutrition Education in Vocational Home Economics," was to expand and enhance vocational home economics programs in Texas by broadening the scope of nutrition education. To assist vocational homemaking teachers to take a major role in implementing Public Law 95-166, i.e., providing nutrition education for Texas public school students, was one of the purposes of the study. The study was concerned with applied research and development in vocational education as set forth in 1.12, Table 3, Part II of the Texas State Plan for Vocational Education.

The primary purpose of the study was to assist vocational homemaking teachers in meeting the challenge of providing sound nutrition education to Texas public school students. The major purpose of the research was two-fold:

1. To assist homemaking teachers to broaden the scope of nutrition education through the use of a detailed conceptual framework for nutrition education.
2. To assist homemaking teachers to broaden the scope of nutrition education through identifying effective methods of teaching such concepts.

Corresponding to the purpose of assisting vocational homemaking teachers is an equally important purpose of serving the needs of individual students while providing education not only mandated by law but, more importantly, by the public.

Specific objectives of the study were:

1. To survey vocational homemaking teachers in public schools in Texas to determine their professional opinions regarding concepts which should be included in a semester or specialized course in nutrition and foods.
2. To survey professors of nutrition and foods in each of the universities within the state which offers a vocational homemaking certification program for their opinions concerning concepts which should be included in a semester or specialized course in nutrition and foods.
3. To survey teacher educators in each of the universities within the state which offers a vocational homemaking certification program for their opinions regarding concepts which should be included in a semester or specialized course in nutrition and foods.
4. To develop a proposed conceptual framework for a semester or specialized course for nutrition education.

5. To identify, by surveying both secondary teachers, teacher educators, and foods and nutrition professors in Texas, the most effective techniques for teaching nutrition to secondary school students.

Anticipated outcomes of the study include the improvement of vocational home economics programs in Texas and more effectively served students. A product of the study is a conceptual framework which may be used by individual teachers, by school districts, and by the Texas Materials Center for developing courses in nutrition and foods. Effective learning will be the ultimate outcome through the optimum use of teaching techniques and through the use of a systematic framework for providing nutrition education.

CHAPTER II

REVIEW OF LITERATURE

A review of literature relating to curriculum for nutrition and foods at the secondary level was essential to this study. The review was made from a variety of sources. The sources may be broadly categorized as: curriculum guides, research reports, and textbooks written for secondary level nutrition courses.

In a presentation to the Texas Teachers of Homemaking in July of 1981, Elizabeth J. Simpson (17), Dean, School of Family Resources and Consumer Services, University of Wisconsin, stated that in the 80's intelligent consumers and effective homemakers need to know the following facts about nutrition and foods:

1. The basic nutritional needs of individuals of both sexes at different stages in the life cycle
2. Individual differences, such as those related to various health problems, which affect dietary requirements and how to obtain reliable information for dietary decisions and action
3. Sources of reliable information on individual and family nutritional needs, meal planning, and preparation
4. How to meet nutritional needs through food selection, conservation, meal planning, and preparation
5. How to evaluate meals for nutritional completeness
6. How to buy food products in a nutritionally competent manner, including use of nutrition labeling and recognition of the pyschological effects of food advertising
7. How to select nutritious meals and snacks when eating out

8. How to keep food costs within the family food budget and how to cope with inflated food prices in planning nutritious meals
9. How family ethnic traditions and culture affect food choices
10. How health of family members is affected by diet
11. The responsibility for personal nutrition in relation to parenting
12. The development of new food sources
13. The nature and control of food waste
14. What individuals and families can do to contribute to the solution of the problems of inadequate food of many people in the world.

The National Census Study of Secondary Vocational Consumer and Homemaking Programs (26) made in 1980 showed that 99 percent of the schools in the study treating food and nutrition topics included the concepts of food guides (Basic 4) and nutrients (their sources and functions in the body). Food preparation was taught in 98 percent of the schools, as was safety and sanitation in the kitchen. Planning and organizing for buying was included in 97 percent of the schools. The large enrollment of students, both male and female, in courses with foods and nutrition topics is thought to indicate a perceived need, on the part of young people, to be able to live independently.

Concepts from the latest White House Conference on Food, Nutrition and Health (24) include the following:

1. Food is the primary source of nutrients. Nutrients are available in a variety of foods.
2. A balance of nutrients is needed for growth, performance, and health. Nutrients have specific uses in the body.
3. Nutrients in varying amounts are needed by all persons throughout life. The amounts needed daily are influenced by age, sex, size, and activity.
4. Physical, cultural, economic, environmental, psychological, and social factors influence food choices.

5. The processing and marketing of food influence its nutritional quality, safety, cost, appearance and acceptability.

6. Conventional and convenience foods and nutrient supplements are available on the market and vary in cost, usefulness, and safety.

7. Nutrition knowledge, social concern and responsibility will allow individuals to participate in decisions that affect the nutrition of persons throughout the world.

The 40 top-ranking student outcomes from the nutrition questionnaire used in Texas in Project NECTAR, Nutrition Education: Curriculum, Training, Assessment, and Resources, Program Implementation Guide (24) are:

1. Selection of foods based on sound nutritional criteria
2. Relationship among food, growth and health
3. Balance of nutrients needed by the body
4. Nutrients available in a variety of foods
5. Nutritional practices which lead to satisfactory patterns of growth and development
6. Identification of foods which are good sources of specific nutrients
7. The relationship among exercise, caloric intake and body weight
8. Recognition that the ways in which foods are handled affect nutritional quality, safety, appearance, taste and cost
9. (Personal) food choices based on a daily food guide for nutrients
10. The relationship among food, growth and health
11. Identification of the food components of an adequate balanced diet
12. Reliable sources of nutrition information
13. The relationship of food to performance and behavior
14. The effect of food choices on short and/or long term health status
15. Realization that no one natural food, by itself, has all the nutrients
16. Food as a primary source of nutrients
17. Nutrition misconceptions, food fads and fad diets
18. Procedures in food preparation at home which protect against nutrient loss
19. Basic Four food groups
20. Acceptance of new foods
21. The effect of preparation for serving on alteration of food quality, attractiveness and sanitation
22. Analysis of total daily food choices for nutritional adequacy
23. Recognition that no single food is superior to all other foods

24. Relationship between nutritional status and performance, behavior, and quality of life
25. Recognition that some foods are relatively poor sources of nutrients
26. Comparison of convenience and conventional foods
27. Impact of advertising and marketing on food choices
28. Nutrition labeling as a means of making informed food choices
29. Consequence of food intake in supplying energy
30. Foods and selected nutrients required at different stages during the life cycle
31. Effects of changing eating habits on nutritional status
32. Relationship of cost to nutritional value of foods
33. Realization that impaired health may be managed through planned food intake
34. Evaluation of the need for vitamin and mineral supplementation
35. Functions of specific nutrients in growth and health
36. Benefits and/or harmful effects of food additives
37. Role of food in helping an individual reach life goals
38. Nutritional merits and shortcomings of food supplements and/or substitutes
39. Economics of food and nutrient waste
40. Physiological, economic, cultural, psychological and sociological factors affecting food choices

Hallman (1981), in An Assessment of Nutrition Education in Texas Public Schools (6), revealed that the following concepts were treated by at least two-thirds of the secondary school teachers surveyed:

1. Basic Four Food Groups
2. Food fads and fallacies
3. Nutrition and physical health
4. Nutrient needs of the young adult
5. Nutrient sources
6. Nutrient functions
7. Nutrient deficiencies
8. Relationships among exercise, caloric intake, and body weight

Additional concepts taught by fifty percent of the secondary teachers included:

1. Nutrition and psychological health
2. Nutrient needs of the child
3. Nutrient classification
4. Nutrient characteristics
5. Food selection based on sound nutrition information
6. Interdependence of nutrients in the body

The Conceptual Framework for Homemaking Education in Texas (21), developed in 1971, outlines concepts for foods and nutrition at three

levels. Concepts at the first level are:

1. Significance of food
2. Nutrition
3. Management and consumer aspects of food and nutrition
4. Meal planning, serving and etiquette
5. Food preparation
6. Career and job opportunities

Concepts used for the upper levels include expansion of many of the above concepts and the addition of several:

1. Significance of food
2. Kitchen planning and management
3. Consumer competence
4. Nutrition
5. Meal planning and management
6. Career and job opportunities

The above concepts are in close agreement with those used in the curriculum guide for the state of Oklahoma, Vocational Home Economics Education, Scope and Sequence, 1975 (27). The program was designed to identify basic competencies held by the students, building on them in a manner which prepares the students both for management of homes and families and for careers in home economics and related areas.

An analysis of objectives presented in the state of Arkansas's teaching kit for schools, Let's Teach Nutrition (11), reveals the following concepts included at the secondary school level:

1. Basic Four Food Groups
2. Composition of food and nutrients supplied
3. Utilization of foods by the body
4. Meal planning
5. Safety and sanitation
6. Career opportunities

The 1972 revised Kentucky Consumer and Homemaking Education Food and Nutrition Curriculum Guide (2) contains the following major concepts for use in the comprehensive courses:

Comprehensive I

1. Importance of nutrition to appearance and health
2. Social influence of food as a means of developing social etiquette.
3. Consumer techniques in food selection and purchase
4. Management techniques in food preparation
5. Principles of food preparation

Comprehensive II

1. Influence of family food patterns and customs on food choices
2. Relationship of nutritional facts to meal planning
3. Relationship of food pattern to family food budget
4. Consumer food marketing practices
5. Planning, preparing and serving nutritious family meals
6. Job opportunities

Experts on Home Economics Education at the university level agree on the importance of teachers' disseminating information on nutrition to students. Suggestions may be found for organizing and developing curricula for Junior and Senior High school nutrition programs (5), for teaching various age levels (5), and for emphasizing the cultural and occupational aspects of nutrition education (1).

Textbooks (3, 4, 9, 10, 12, 13, 16, 20) available for state adoption in Texas in 1982 reveal major concepts believed to be important for the secondary student by authors in the field of foods and nutrition. See Appendix D.

CHAPTER III

PROCEDURE

Purposes of the Study

The study was concerned with concepts appropriate for a semester course in foods and nutrition at the secondary level. Major purposes were twofold, i.e., to assist homemaking teachers to broaden the scope of nutrition education through the use of a detailed conceptual framework for nutrition education and to assist homemaking teachers to broaden the scope of nutrition education through identifying effective methods of teaching the concepts. Specific objectives were:

1. To survey vocational homemaking teachers in the public schools of Texas to obtain professional opinions regarding concepts which should be included in a semester or specialized course in foods and nutrition.
2. To survey professors of nutrition and foods in each of the universities within the state which offers a vocational homemaking certification program for their opinions concerning concepts which should be included in a semester or specialized course in foods and nutrition.
3. To survey teacher educators in each of the universities within the state which offers a vocational homemaking certification program for their opinions concerning concepts which should be included in a semester or specialized course in foods and nutrition.

4. To develop a proposed conceptual framework for a semester or specialized course for nutrition education.
5. To identify, by surveying secondary teachers, teacher educators, and foods and nutrition professors in Texas, the most effective techniques for teaching nutrition to secondary school students.

Research Design

After a preliminary plan for the research was made, an advisory council was named to guide the project. The committee was made up of the following people:

Mrs. Jean Barton, Director
Vocational Home Economics Education
Texas Education Agency

Dr. Margaret Briley, Professor, Foods and Nutrition
Department of Home Economics
University of Texas

Mrs. Radora Doyle
Consumer Services Division
Associated Milk Producers

Mrs. Mary Freeman, Homemaking Teacher
Jacksonville High School

Dr. Linda Glosson, Director
Texas Materials Center
Texas Tech University

Dr. Wilma Griffin, Chairperson
Department of Teacher Education
University of Texas

Mrs. Shelby Hill, Homemaking Teacher
Austin, Texas

Mrs. Manerva Richey, Supervisor
Homemaking Education
Brownsville Independent School District

The Advisory Council served to validate plans as well as to provide input for refining plans. After an initial meeting with the

council, the research design was completed.

A review of literature was conducted. The search focused on previous research dealing with curriculum development in nutrition education at the secondary level. In addition to resources available at Stephen F. Austin State University, other resources produced as a result of a nation-wide Cite Search were used in the review.

Information required for the research was obtained through a descriptive survey research design. A questionnaire was developed and mailed to specific groups of home economists in Texas to obtain data desired.

Development of the Questionnaire

Data were obtained by a questionnaire developed by the researchers (Appendix A). One form was used for the three groups of educators surveyed. A review of literature and of research instruments relating to nutrition education served as background for development of the questionnaire. The project advisory council was used as a panel of judges to review the instrument. Additionally, the instrument was tested with two graduate classes in vocational education at Stephen F. Austin State University. A final revision of the questionnaire was made after input from personnel in the Research Division of the Texas Education Agency.

Reliability of the questionnaire was established through the use of the split-half correlation technique. A correlation coefficient of .9233 was obtained.

Selection of the Sample

The population for the study was teachers of homemaking in Texas secondary public schools, teacher educators, and foods and nutrition professors at the colleges and universities offering teacher certification programs in Texas. The sample was composed of all homemaking teachers in Texas public high schools, the heads of foods and nutrition divisions and the head teacher educators at each college or university in Texas.

Questionnaires were mailed to each professor as indicated above and a packet of questionnaires was mailed to each homemaking department listed with area homemaking consultants. The packets contained a cover letter and questionnaires for each homemaking teacher listed as employed by the school. Questionnaires were mailed in November. A follow-up request was made in January. A total of 2400 questionnaires was mailed; 489 were returned, providing a return of 20.2 percent.

Data Analysis

Computations for the study were made in the Computer Center at Stephen F. Austin State University. The programming was planned by the researchers with the assistance of personnel in the School of Forestry and in the Computer Center at the university.

Data were analyzed through the use of the Statistical Package for the Social Sciences. Analysis of Variance was used as well as the Duncan procedure for determining significant differences among group means. The Duncan procedure was chosen due to the unevenness of group size.

CHAPTER IV

RESULTS

Presentation and Analysis of Data

Data gathered through the use of a questionnaire (Appendix A) were analyzed at the Stephen F. Austin State University Computer Center. Analysis of Variance and Duncan's Procedure were used for analysis of the data.

From a sample of 2400 teacher educators, homemaking teachers, and nutrition professors, 489 questionnaires were received, providing a return of 20.2 percent. Of the questionnaires received, 51 were unusable because they were received after the data were analyzed or because they were incomplete.

Description of the Participants

Data were analyzed from three groups of participants. Group I was composed of 416 homemaking teachers. They accounted for 94.9 percent of the total group. Group II was made up of 13 teacher educators accounting for 3.1 percent of the total group. As may be seen in Table I, nutrition educators (Group III) represented 2.1 percent of the total.

Educational level of the participants is shown in Table II. Among the total group, 3.2 percent held doctoral degrees, 32.0 percent held master's degrees, and 64.6 percent held the bachelor's degree.

TABLE I

JOB DESCRIPTIONS OF PARTICIPANTS

	Number	Percent
Homemaking Teachers	416	94.9
Teacher Educators	13	3.1
Nutrition Professors	9	2.1

TABLE II

EDUCATIONAL LEVEL OF PARTICIPANTS

	Number	Percent
Doctoral Degree	14	3.2
Master's Degree	140	32.0
Bachelor's Degree	238	64.6

Teaching experience of the total group ranged from 9.6 percent with 16-20 years of experience to 31.1 percent with five or fewer years of experience. (See Table III.) The greatest response came from teachers with experience of ten years or less and 20 years or more.

The various sizes of schools were well balanced in the study. As seen in Table IV, size 2A schools supplied the fewest data while size 5A schools provided the largest amount of data.

Teachers completing the questionnaire had a variety of experiences in teaching vocational homemaking. While the greatest percentage (92.0) had experience teaching Homemaking I, 81.0 percent had taught

TABLE III

TEACHING EXPERIENCE OF PARTICIPANTS

Years	Number	Percent
1 - 5	136	31.1
6 - 10	114	26.0
11 - 15	56	12.8
16 - 20	42	9.6
20 - 30	90	20.6

TABLE IV

SIZE OF SCHOOLS REPRESENTED

	Number	Percent
A	78	18.1
AA	62	14.3
AAA	70	16.2
AAAA	89	20.6
AAAAA	113	26.1
Colleges & Universities	20	4.6

Homemaking II and 58.2 percent had taught Homemaking III. Fifty-three (53) percent had taught adult classes, 69.0 percent specialized classes, and 31.0 percent occupational classes. (See Table V.)

TABLE V

HOME ECONOMICS TEACHING EXPERIENCES OF PARTICIPANTS

	Number	Percent
Homemaking I	404	92.0
Homemaking II	355	81.0
Homemaking III	255	58.2
Adult Classes	232	53.0
Specialized Courses	306	69.0
Occupational Courses	136	31.0

Values Assigned to Concepts

Mean scores were obtained for each concept presented in the questionnaire. Mean values were determined for each concept as perceived by each group of educators, as well as for the total group. All concepts were believed to be of some value.

At the recommendation of the Advisory Council, a mean value above 3.0 was required in order for a concept to be included in the proposed conceptual framework. The total group mean indicated low values for those concepts dealing with influence of culture on eating patterns, with environmental factors affecting food, nutrition, and life style, with preparation of beverages, with school lunch and breakfast programs, and with other government programs. All concepts relating to world nutrition received low means as did concepts relating to gourmet meals. (See Table VI.)

TABLE VI

CONCEPTS RECEIVING LOW* MEAN SCORES
FROM TOTAL GROUP OF PARTICIPANTS

Concept	Mean Value
Influence of culture on eating patterns	3.0
Environmental factors influencing food, nutrition and life style	2.7
Beverages - preparation skills	3.0
School lunch and breakfast programs	2.9
Other government programs	2.7
Worldwide nutrition problems	2.7
Relation to world food supply	2.7
Possible solutions to world food problems	2.6
New sources of food	2.7
Increasing world food supply	2.6
Population control	2.6
Social concern and responsibility	2.6
Gourmet meals - characteristics	2.9
Food from other cultures	3.0
Special occasion meals	3.0

* Values of 3.0 or below

The total group mean indicated high values for those concepts dealing with the following areas: comparison of conventional, convenience and fast foods; food safety and sanitation; the balanced diet; sources of nutrients; planning meals for individuals and families; effects of good and poor nutrition; fruits and vegetables in meals including nutrient value and preparation; milk and milk products in family meals; meat and eggs for the family including nutrient values, buying and storing, and principles of preparation; grains in family meals; developing management skills in meal planning, preparation and budgeting; weight control and diet; nutrition and growth, especially food and nutrition during pregnancy. (See Table VII.)

Analysis of Variance Among Groups

Analysis of Variance was the statistical procedure used to determine the difference in means assigned to the concepts by the three different groups of educators. Group I was composed of Homemaking Teachers, Group II was Teacher Educators, and Group III was Nutrition Professors. The difference was not significant for the majority of the concepts, indicating an agreement among the groups as to the importance of the concepts included. Table VIII shows those concepts in which a significant difference was found among the means of the three groups.

The Duncan Procedure was used to show where the differences occurred. This procedure is recommended for use when group sizes vary greatly. Significance was determined at the .05 level, with the range being from 2.79 to 2.93. Ranges outside these values indicated significance.

TABLE VII

CONCEPTS RECEIVING HIGH* MEAN SCORES
FROM TOTAL GROUP OF PARTICIPANTS

Concept	Mean Value
Comparison of conventional, convenience, and fast foods	4.1
Cost of convenience foods	4.2
Nutritional quality of convenience foods	4.3
Safety in use of equipment	4.3
Food safety and sanitation	4.3
Effects of food handling in the home	4.2
The balanced diet	4.5
RDA for healthy people	4.1
Caloric requirements	4.2
Nutrient functions	4.3
Carbohydrates	4.2
Fats	4.2
Protein	4.2
Vitamins	4.2
Minerals	4.2
Water	4.2
Source of Nutrients	4.5
Milk	4.6
Meats	4.4
Vegetables and fruits	4.4
Grains	4.4
Fats	4.3
Sweets	4.2

* Values above 4.0

Table VII continued

Concept	Mean Value
Planning meals	4.1
Nutrients and calories in meals	4.1
Effects of good and poor nutrition	4.4
The kitchen laboratory	4.3
Cooking terms	4.2
Measuring techniques	4.3
Recipe use	4.2
Time schedules	4.1
Fruits and vegetables in meals	4.3
Nutrients in fruits and vegetables	4.2
Vitamin C in fruits and vegetables	4.2
Vitamin A in fruits and vegetables	4.1
Iron in fruits and vegetables	4.1
Calcium in fruits and vegetables	4.1
Preparation of fruits and vegetables	4.2
Principles of cookery for fruits and vegetables	4.2
Retaining nutrients in fruits and vegetables	4.3
Methods of cooking fruits and vegetables	4.1
Milk and milk products in meals	4.3
Calcium in milk	4.1
Meat and eggs for the family	4.3
Nutrients in meats, fish, poultry, and eggs	4.2
Protein, iron, and B vitamins in meats, fish, poultry, and eggs	4.1
Principles of meat cookery	4.2
Buying and storing meats and eggs	4.1
Grains in family meals	4.1
Meal planning skills	4.4
Balancing nutrient content	4.3
Using shopping skills	4.3
Using food guides	4.1
Preparation skills	4.3

Table VII continued

Concept	Mean Value
Energy efficiency	4.1
Time management	4.1
The food budget	4.4
Weight control and diet	4.1
Nutrition and growth	4.2
Food and nutrition during pregnancy	4.1

Educators were asked for comments concerning a semester course in Foods and Nutrition. Positive responses may be seen in Table VIII. The most frequently occurring response was that a semester course is needed in Texas schools. Secondly, teachers said they would welcome the opportunity to teach such a course. Many teachers indicated a belief that such a course would increase enrollment in the Home Economics program.

Teachers were asked to indicate problems they perceived in implementing a Foods and Nutrition semester course. Problems listed in Table IX indicate a need for assistance to teachers in implementing the course with available resources of time, money, and facilities.

As seen in Table IX, cost was the most frequently mentioned problem perceived. Other problems mentioned by many teachers include the students' interest in cooking and eating as well as repetition of information from the sequential courses.

The questionnaire obtained suggestions from teachers concerning effective teaching strategies. Many of these suggestions were incorporated into the suggested Supplement to Foods and Nutrition Curriculum Guide: Laboratory Experiences, Demonstrations, Exhibits. (See Appendix C.)

Analysis of Variance techniques were used to determine if the differences in values placed on the concepts by the separate groups of educators were significant. Minimal differences occurred in a majority of mean scores assigned concepts by the groups. However, for 53 concepts there were significant differences at the .05

TABLE VIII

POSITIVE RESPONSES FROM PARTICIPANTS

Response	Number of Occurrences
"We need a semester course!" (Cannot cover all in Hm. I and II; behind other states in this area)	35
Would welcome opportunity to teach such a course (like to teach Foods and Nutrition)	21
Will increase our enrollment (will be a popular class; high interest in health today)	20
Will build student interest	11
Will provide for more depth in topics	10
Will increase enrollment of males	7
Will add balance to our program	6
Should be a required course	6
Will provide "hands on" experience and independent living skills which everyone needs	1
Will be an important and interesting class	1
Will promote creativity by teachers and students	1
Will provide an opportunity for presenting information on careers in nutrition	1
Will attract gifted students	1

TABLE IX

PROBLEMS PERCEIVED BY PARTICIPANTS

Response	Number of Occurrences
Cost	72
Students' desire to cook and eat all semester	25
Repetition of information from Hm. I, II, and III (or Health, Biology, etc.)	20
Too much to cover in one semester	16
Will affect enrollment in other classes	15
Lack of time for laboratory experiences	14
Lack of student background for foods/nutrition	13
Class size	13
Lack of student interest	10
Maintaining interest for entire semester	9
Lack of time to implement	8
Lack of equipment in foods laboratory for preparation	7
May not be taught on practical level	6
Difficult to implement in one-teacher schools	6
Providing basics in food preparation	5
Determining who may take the class	5
Students at different levels in same class	5
Too advanced for high school	5
May be taught by those unqualified (insufficient background of Home Economics teachers)	4

Table IX continued

Response	Number of Occurrences
Selection of course to follow the second semester	4
Teacher need for updating in strategies for teaching	3
Course description or name that sounds dull, as "Nutrition"	3
Narrow selection of laboratory experiences	2
Lack of interesting instructional materials	2
Lack of materials on nutrition	2
Class may become all foods, not nutrition	2
Space	2
Rebuilds the undesired sewing and cooking image of Home Economics	2
More course variations	1
Lack of commitment to good nutrition	1
Not allowed to use animals for experiments	1
Harmful to sequential courses	1
May become a lecture course	1
Administration disapproval of constant cooking	1

level of confidence. As shown in Table X, nutrition professors placed a lower value on food preparation tools in the contemporary kitchen than did either homemaking teachers or teacher educators. That pattern was repeated for other concepts relating to equipment in the kitchen. Nutrition professors placed lower value than did other educators on the following concepts: pesticides, additives, RDA for healthy people, meat and eggs for the family, principles of meat cookery, cakes, cookies, pastries, using sugar in meals, beverages, preparation skills, and table service.

Homemaking teachers assigned lower values to the concept of fad diets than did other educators. Teacher educators placed lower value on school lunch and breakfast programs than did the other groups.

Nutrition professors assigned higher values than did others to the concept of contribution of school and food service programs. Homemaking teachers perceived recipe use, pastries, characteristics of foods and special occasion meals of higher value than did others. Teacher educators placed higher value only on energy conservation.

Where significant differences were found, there was a tendency for homemaking teachers and teacher educators to have similar values which differed from those of nutrition professors. The various pairings of values are illustrated in Table X.

TABLE X

CONCEPTS RATED SIGNIFICANTLY DIFFERENT
BY THE VARIOUS GROUPS*

CONCEPT: Food Preparation Tools in the Contemporary Kitchen

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	7.3636	3.6818	4.416
Within Groups	399	332.6263	.8336	
Total	401	339.9900		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			3.1111
Subset 2	4.0262	4.0000	

* Group 1 = Homemaking Teachers
Group 2 = Teacher Educators
Group 3 = Nutrition Professors

TABLE X, continued

CONCEPT: Tools

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	17.3355	8.6678	8.965
Within Groups	428	413.8152	.9669	
Total	430	431.1507		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.4444
Subset 2	3.8411	3.9231	

CONCEPT: Small Equipment

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	10.0624	5.0312	5.920
Within Groups	429	364.5673	.8498	
Total	431	374.6297		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.7778
Subset 2	3.8463	3.8462	

TABLE X. continued

CONCEPT: Major Equipment

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	18.6786	9.3393	11.109
Within Groups	428	359.8179	.8407	
Total	430	378.4966		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.4444
Subset 2	3.8875	3.6923	

CONCEPT: Microwave and Convection Ovens

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.1993	4.0996	3.760
Within Groups	429	467.8006	1.0904	
Total	431	475.9998		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.8889
Subset 2	3.8537	3.8462	

TABLE X, continued

CONCEPT: Processing and Marketing Techniques Which Assure Quality and Safety

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.5598	2.7799	2.838
Within Groups	430	421.2116	.9796	
Total	432	426.7714		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.6154	2.8889
Subset 2	3.6813	3.6154	

CONCEPT: Pesticides

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	12.1850	6.0925	5.815
Within Groups	429	449.4792	1.0477	
Total	431	461.6643		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.5556
Subset 2	3.7317	3.6923	

TABLE X, continued

CONCEPT: Additives

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	14.7013	7.3506	7.822
Within Groups	427	401.2893	.9398	
Total	429	415.9906		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.5556
Subset 2	3.8284	3.6154	

CONCEPT: Fad Diets

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	9.2949	4.6475	4.954
Within Groups	430	403.3702	.9381	
Total	432	412.6651		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.8783		
Subset 2		4.5385	4.5556

TABLE X, continued

CONCEPT: "Organic and Natural" Foods

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	6.8988	3.4494	3.119
Within Groups	425	470.0920	1.1061	
Total	427	476.9908		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.4717	3.6667	
Subset 2		3.6667	4.3333

CONCEPT: Health Foods

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	7.6844	3.8422	3.370
Within Groups	425	484.5585	1.1401	
Total	427	492.2429		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.4324	3.6667	
Subset 2		3.6667	4.3333

TABLE X, continued

CONCEPT: Sources of Information

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	17.6085	8.8043	8.466
Within Groups	426	443.0256	1.0400	
Total	428	460.6341		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.5577		4.2222
Subset 2		4.6154	4.2222

CONCEPT: Absorption

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	6.6239	3.3119	2.994
Within Groups	428	473.4967	1.1063	
Total	430	480.1206		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.8462	3.0000
Subset 2	3.4670		3.0000

TABLE X, continued

CONCEPT: Metabolism

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.6930	4.3465	4.072
Within Groups	428	456.8012	1.0673	
Total	430	465.4942		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.8462	2.8889
Subset 2	3.5086		2.8889

CONCEPT: RDA for Healthy People

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.0670	4.0335	4.784
Within Groups	426	359.1544	.8431	
Total	428	367.2214		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			3.2222
Subset 2	4.1794	4.1538	

TABLE X, continued

CONCEPT: Snacks

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.1879	2.5940	3.652
Within Groups	425	301.8774	.7103	
Total	427	307.0653		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	4.0222	4.3846	
Subset 2		4.3846	4.6667

CONCEPT: Energy Needs for Size and Age

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	.5501	.2751	.351
Within Groups	427	334.6964	.7838	
Total	429	335.2465		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.8916		4.2222
Subset 2		4.4615	4.2222

TABLE X, continued

CONCEPT: Fitting Individual Needs into Family Meal Plans

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	4.6277	2.3138	2.806
Within Groups	425	350.4447	.8246	
Total	427	355.0724		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.8818		4.1111
Subset 2		4.4615	4.1111

CONCEPT: Cooking Terms

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.5715	4.2858	5.737
Within Groups	424	316.7353	.7470	
Total	426	325.3068		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.9231	3.3333
Subset 2	4.2494	3.9231	

TABLE X, continued

CONCEPT: Recipe Use

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	6.2975	3.1488	4.699
Within Groups	426	285.4368	.6700	
Total	428	291.7343		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.8462	3.6667
Subset 2	4.3145		

CONCEPT: Fruits and Vegetables in Meals

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.4476	2.7238	4.647
Within Groups	410	240.3442	.5862	
Total	412	245.7918		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		4.0909	3.6667
Subset 2	4.3893	4.0909	

TABLE X, continued

CONCEPT: Milk and Milk Products in Family Meals

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	3.4254	1.7127	2.685
Within Groups	416	265.3956	.6380	
Total	418	268.8210		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		4.1667	3.7778
Subset 2	4.3643	4.1667	

CONCEPT: Meat and Eggs for the Family

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	7.6701	3.8351	6.339
Within Groups	419	253.5074	.6050	
Total	421	261.1776		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			3.4444
Subset 2	4.3675	4.2308	

TABLE X, continued

CONCEPT: Nutrients in Meats, Fish, Poultry, and Eggs

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	3.1286	1.5643	2.278
Within Groups	423	290.4958	.6868	
Total	425	293.6244		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		4.2308	3.6667
Subset 2	4.2624	4.2308	

CONCEPT: Principles of Meat Cookery

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.7814	2.8907	4.351
Within Groups	424	281.7269	.6645	
Total	426	287.5083		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			3.4444
Subset 2	4.2494	4.1538	

TABLE X, continued

CONCEPT: Buying and Storing Meats and Eggs

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	4.9064	2.4532	3.195
Within Groups	423	324.7768	.7678	
Total	425	329.6832		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		4.0000	3.4444
Subset 2	4.1683	4.0000	

CONCEPT: Baking with Flour

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	9.0103	4.5052	5.407
Within Groups	421	350.7609	.8332	
Total	423	359.7712		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.6154	3.0000
Subset 2	3.9428	3.6154	

TABLE X, continued

CONCEPT: Quick Breads

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	10.7497	5.3748	6.693
Within Groups	421	338.1089	.8031	
Total	423	348.8585		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.5385	3.0000
Subset 2	3.9826	3.5385	

CONCEPT: Yeast Breads

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	9.5842	4.7921	4.682
Within Groups	420	429.9053	1.0236	
Total	422	439.4894		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.4615	2.8889
Subset 2	3.8404	3.4615	

TABLE X, continued

CONCEPT: Cakes

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	31.4221	15.7111	14.079
Within Groups	421	469.8020	1.1159	
Total	423	501.2242		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			1.8889
Subset 2	3.6617	3.0769	

CONCEPT: Cookies

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	33.1449	16.5724	14.210
Within Groups	421	491.0060	1.1663	
Total	423	524.1509		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			1.7778
Subset 2	3.6219	3.0769	

TABLE X, continued

CONCEPT: Pastries

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	30.7255	15.3628	13.100
Within Groups	422	494.8839	1.1727	
Total	424	525.6094		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			1.8889
Subset 2		2.9231	
Subset 3	3.5955		

CONCEPT: Using Sugar in Meals

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	15.1146	7.5573	7.715
Within Groups	413	404.5391	.9795	
Total	415	419.6537		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.1250
Subset 2	3.5025	3.3333	

TABLE X. continued

CONCEPT: Desserts

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	11.5453	5.7727	5.454
Within Groups	422	446.6903	1.0585	
Total	424	458.2356		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.0833	2.2222
Subset 2	3.3366	3.0833	

CONCEPT: Confections

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	15.6961	7.8481	7.240
Within Groups	421	456.3418	1.0839	
Total	423	472.0379		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.8333	2.0000
Subset 2	3.2556	2.8333	

TABLE X, continued

CONCEPT: Special Occasion Foods

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.9522	4.4761	4.036
Within Groups	422	468.0454	1.1091	
Total	424	476.9976		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.9167	2.3333
Subset 2	3.2673	2.9167	

CONCEPT: Beverages

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	9.2177	4.6089	4.422
Within Groups	419	436.7254	1.0423	
Total	421	445.9431		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.2222
Subset 2	3.2425	3.1538	

TABLE X, continued

CONCEPT: Preparation Skills (Beverages)

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.8568	4.4284	4.059
Within Groups	424	462.5810	1.0910	
Total	426	471.4378		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.1111
Subset 2	3.1111	3.1538	

CONCEPT: Preparation Skills (Developing Management Skills)

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.7002	2.8501	4.270
Within Groups	424	282.9837	.6674	
Total	426	288.6839		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			3.5556
Subset 2	4.2586	4.5833	

TABLE X, continued

CONCEPT: Equipment Use

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	4.2706	2.1353	2.804
Within Groups	425	323.6453	.7615	
Total	427	327.9159		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		4.0000	3.3333
Subset 2	4.0296	4.0000	

CONCEPT: The Food Budget

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	3.1944	1.5972	2.717
Within Groups	432	253.9687	.5879	
Total	434	257.1632		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	4.4068		4.0000
Subset 2	4.4068	4.7692	

TABLE X, continued

CONCEPT: Energy Conservation

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.6651	2.8326	3.227
Within Groups	426	373.8780	.8776	
Total	428	379.5431		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	4.0221		3.6667
Subset 2		4.6154	

CONCEPT: Table Service

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.4154	4.2077	3.902
Within Groups	426	458.2668	1.0783	
Total	427	466.6822		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1			2.6667
Subset 2	3.6404	3.6923	

TABLE X, continued

CONCEPT: Table Courtesy

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.6112	2.8056	3.033
Within Groups	426	393.9973	.9249	
Total	428	399.6085		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		3.6923	3.1111
Subset 2	3.8821	3.6923	

CONCEPT: Management Skills in Menu Planning

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	4.7631	2.3816	2.564
Within Groups	420	390.0881	.9288	
Total	422	394.8512		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.8607		3.8889
Subset 2		4.5000	3.8889

TABLE X, continued

CONCEPT: Poor Weight Control Methods

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.3162	2.6581	2.713
Within Groups	421	412.5329	.9799	
Total	423	417.8491		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.9578	4.2500	
Subset 2		4.2500	4.6667

CONCEPT: Special Needs of the Adolescent

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.5523	2.7761	3.311
Within Groups	423	354.6918	.8385	
Total	425	360.2440		

Duncan's Procedure

	Group 1 Mean	Group ? Mean	Group 3 Mean
Subset 1	4.0693	4.3846	
Subset 2		4.3846	4.7778

TABLE X, continued

CONCEPT: Increased Needs for Nutrients

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	4.8104	2.4052	2.789
Within Groups	423	364.7296	.8622	
Total	425	369.5400		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	4.0099	4.3077	
Subset 2		4.3077	4.6667

CONCEPT: Changes in the Adolescent; A Good Self-Image

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	7.1902	3.5951	3.969
Within Groups	424	384.1023	.9059	
Total	426	391.2925		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	4.0370	4.3077	
Subset 2		4.3077	4.8889

TABLE X, continued

CONCEPT: Nutrition and Athletics

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	5.9258	2.9629	2.806
Within Groups	423	446.7125	1.0561	
Total	425	452.6383		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.8490	3.9231	
Subset 2		3.9231	4.6667

CONCEPT: Contribution of School and Food Service Programs

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	13.2598	6.6299	4.594
Within Groups	418	603.2675	1.4432	
Total	420	616.5273		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.1103	2.5385	
Subset 2			4.1111

TABLE X, continued

CONCEPT: School Lunch and Breakfast Programs

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	11.4787	5.7394	4.109
Within Groups	421	588.0588	1.3968	
Total	423	599.5375		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.2308	
Subset 2	2.9751		3.6667

CONCEPT: Characteristics of Food

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	18.0962	9.0481	7.540
Within Groups	426	511.2044	1.2000	
Total	428	529.3007		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.3077	1.7778
Subset 2	2.9828		

TABLE X, continued

CONCEPT: Special Occasion Meals

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	15.9012	7.9506	6.951
Within Groups	428	489.5697	1.1439	
Total	430	505.4709		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1		2.3846	2.1111
Subset 2	3.1345		

CONCEPT: Other Related Careers

Analysis of Variance

	D.F.	Sum of Squares	Mean Squares	F. Ratio
Between Groups	2	8.2652	4.1326	3.655
Within Groups	424	479.4022	1.1307	
Total	426	487.6674		

Duncan's Procedure

	Group 1 Mean	Group 2 Mean	Group 3 Mean
Subset 1	3.4173		4.0000
Subset 2		4.0769	4.0000

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to develop concepts for nutrition education appropriate for use in secondary education and to assist vocational homemaking teachers in developing a more in-depth instructional program in nutrition education. A questionnaire was developed and sent to three groups of Texas educators: homemaking teachers, teacher educators, and nutrition professors. The instrument obtained responses relative to values placed on concepts for nutrition education. Data were analyzed to formulate a conceptual framework in nutrition education for the secondary level. Statistical procedures for analysis of data included Analysis of Variance and Duncan's procedure for determining sources of variance. In addition materials were developed to assist teachers in implementing a semester course in foods and nutrition.

As a result of the study, the following conclusions and summary statements may be made:

1. Curriculum for a semester course in foods and nutrition is limited; however, resources for developing such curricula are readily available.
2. Nutrition education is a concern of all home economics educators.

3. All concepts presented in the questionnaire were perceived as having some value.
4. The three groups of educators agreed on the value of the majority of concepts presented.
5. Concepts receiving low values tended to be those relating to world nutrition problems, food from other cultures, and gourmet foods.
6. Concepts receiving high mean scores tended to be those relating to basic nutrition, principles of cookery, contemporary diet patterns, management skills, and consumer aspects of food.
7. Positive responses to a semester course in foods and nutrition were numerous, emphasizing enthusiasm for the course, projection of increased enrollment, and perception of the course as meeting the needs of youth.
8. Problems perceived by participants generally related to cost, materials for teaching, and nutrition knowledge of teachers.
9. There were significant differences in mean scores for 53 concepts.
10. Nutrition professors tended to place high value on concepts relating to basic nutrition, whereas homemaking teachers and teacher educators tended to place high value on concepts dealing with food preparation skills.
11. Where significant differences were found, there was a tendency for homemaking teachers and teacher educators to have similar values which differed from those of nutrition professors.

The study prompted the following recommendations:

1. An updating of nutrition knowledge should be provided for homemaking teachers.
2. Information relative to resources for teaching nutrition should be made available to teachers.
3. Assistance in planning and implementing semester courses should be provided to teachers.
4. Suggestions for valuable experiences, including food preparation and other laboratory activities, are needed.

Potential utilization of results from this study include the following:

*1. Data on values placed on foods and nutrition concepts may be used in developing the conceptual framework for a semester course in foods and nutrition at the secondary level.

*2. Materials developed by the researchers as a result of this study may be used as a supplement to the foods and nutrition curriculum guide for a semester course. This includes laboratory experiences, exhibits, and demonstrations.

*3. Other materials developed in the form of recommendations to teachers may be used to enhance teaching at the local level.

4. Recommendations from the study may be used as guidelines for developing in-service workshops for homemaking teachers.

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* Included in report and already presented to Texas Materials Center

5. The expertise developed by the researchers may be shared with homemaking teachers in publications and workshop presentations.

The potential audience for utilization of the output from this research is every homemaking teacher in the state, thus contributing to the improved well-being of individuals and families across the state.

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APPENDIX A

SURVEY OF NUTRITION EDUCATION CONCEPTS FOR SECONDARY EDUCATION

Code Number: _____

Name: _____

School: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Check the job description that best describes the position you are now occupying:

_____ Homemaking Teacher, Public Schools
_____ Teacher Educator
_____ Nutrition Professor

Check the highest degree held:

_____ Doctorate _____ Masters _____ Bachelors _____ Others

Years of teaching experience:

_____ 1-5
_____ 6-10
_____ 11-15
_____ 16-20
_____ 20-30

Years of experience teaching home economics:

_____ 1-5
_____ 6-10
_____ 11-15
_____ 16-20
_____ 20-30

Date of most recent college course in Foods and Nutrition: _____

Number of hours of in-service in Foods and Nutrition in the last three years: _____

Check the size of school:

_____ A
_____ AA
_____ AAA
_____ AAAA
_____ AAAAA
_____ College or University
_____ Other _____

Check the area(s) you have taught in vocational home economics at the secondary level:

_____ Homemaking I
_____ Homemaking II
_____ Homemaking III
_____ Adult classes
_____ Semester courses
_____ Gainful classes

QUESTIONNAIRE
Concepts in Foods and Nutrition

Please rate the concepts listed below according to the priority you place on each for use in a semester course at the secondary level. Use the following scale:

5 Highest Priority
4 High Priority
3 Moderate Priority
2 Low Priority
1 Lowest Priority

Place the appropriate number in the blank to the left of each concept.

I. FOOD, NUTRITION, AND LIFE STYLE

_____ A. Eating patterns of individuals and groups

_____ 1. Physiological factors for eating

_____ 2. Psychological and social influences

_____ 3. Influence of culture (custom, religion) on eating patterns

_____ 4. Environmental factors (geography, climate)

_____ 5. Economic factors

_____ B. Contemporary eating patterns in the U. S.

_____ 1. Meal patterns for active families

_____ a. Convenience foods

_____ b. Fast foods

_____ c. Restaurant foods

_____ 2. Influence of advertising and marketing on food choices

_____ 3. Nutritional effects of contemporary food patterns and influences

_____ a. Synthetic and substitute foods

_____ b. Engineered foods

_____ c. Excesses of sodium, fat, sugar, and additives

_____ 4. Acceptance of new foods

_____ 5. Comparison of conventional, convenience and fast foods

_____ a. Preparation time

_____ b. Cost

_____ c. Nutritional quality

_____ d. Acceptability

_____ e. Label information

_____ C. Food preparation tools in the contemporary kitchen

_____ 1. Tools

_____ 2. Small equipment

_____ 3. Major equipment

_____ 4. Microwave and convection ovens

_____ 5. Safety in the use of equipment

_____ D. Food safety and sanitation

_____ 1. Effects of food handling in the home

_____ 2. Processing and marketing techniques which assure quality and safety

_____ 3. Dangers, concerns, and benefits

_____ a. Bacteria

_____ b. Pesticides

_____ c. Additives

_____ 4. Control of food contamination

_____ E. Food fads, fallacies and facts

_____ 1. Fad diets

_____ 2. Food and nutrition quackery

_____ a. "Organic and natural" foods

_____ b. Health foods

_____ 3. Sources of information

_____ 4. Evaluation of supplements

II. YOUR FOOD AND YOUR NUTRITION

_____ A. How a body uses food

_____ 1. Digestion

_____ 2. Absorption

_____ 3. Metabolism

_____ B. The balanced diet

_____ 1. RDA for healthy people

_____ 2. Caloric requirements

_____ 3. Nutrient functions

_____ a. Carbohydrates

_____ b. Fats

_____ c. Protein

_____ d. Vitamins

_____ e. Minerals

_____ f. Water

_____ 4. Sources of nutrients

_____ a. Milk

_____ b. Meats and meat substitutes

_____ c. Vegetables and fruits

_____ d. Grains

_____ e. Fats

_____ f. Sweets

5. Meal patterns
   a. Alternate sources of nutrients
   b. Planning for individuals and families
      1) Nutrients and calories
      2) Color, texture, and shape of food
   c. Snacks
6. Effects of good and poor nutrition

C. Personal food choices
1. Factors affecting individual requirements
   a. Height and weight
   b. Age and sex
   c. Activity
   d. Energy needs for size and age
2. Nutrients for personal growth and performance (RDA's)
3. Food guides for personal choices
4. Fitting individual needs into family meal plans
5. Developing menus

III. MANAGING FAMILY MEALS

A. The kitchen laboratory
1. Cooking terms
2. Measuring techniques
3. Recipe use
4. Time schedules

B. Fruits and vegetables in meals
1. Nutrient sources, functions, and requirements
   a. Vitamin C
   b. Vitamin A
   c. Iron
   d. Calcium
2. Vegetarian diets
3. Shopping for fruits and vegetables
   a. Selection guidelines
   b. Various forms
   c. Storage
4. Preparation of fruits and vegetables
   a. Principles of cookery
      1) Retaining nutrients
      2) Color changes
      3) Methods of cooking
      4) Seasoning
   b. Preparing salads
      1) Principles of preparation
      2) Salad dressings

C. Milk and milk products in family meals
1. Nutrient functions, sources, and requirements
   a. Calcium
   b. Riboflavin
   c. Protein
   d. Vitamin D
2. Forms of milk
3. Milk products
4. Using milk and milk products
5. Cheese and cheese products
6. Using cheese
7. Principles of cookery

D. Meat and eggs for the family
1. Nutrients in meats, fish, poultry, and eggs
   a. Protein
   b. Iron
   c. B vitamins
2. Uses of eggs in cookery processes
3. Principles of meat cookery
4. Buying and storing meats and eggs
5. Meal plans using meats, fish, poultry, and eggs

E. Grains in family meals
1. Nutrients in grains
   a. Carbohydrates
   b. Complementary proteins
   c. Iron
   d. Thiamine
2. Variety of grains in meals
3. Baking with flour
   a. Quick breads
   b. Yeast breads
   c. Cakes
   d. Cookies
   e. Pastries
4. Cooking pasta and other cereal products
5. Buying and storing grain products
6. Using grain products in meal preparation

F. Sugar in the diet
1. Energy value
2. Uses in meals and snacks
3. Variety of forms
4. Sugar and health
a. Weight control
b. Tooth decay
c. Related illnesses
5. Using sugar in meals
a. Desserts
b. Confections
c. Special occasion foods

G. Fat in the U. S. diet
1. Classification of fats
2. Food sources of types of fats
3. Functions of fat in the body
4. Cholesterol
5. Fats, cholesterol, and heart disease
6. Storing and cooking with fats
7. Uses of fats in meals

H. Beverages
1. Preparation skills
2. Sources of nutrients and calories (kcal)
3. Water in the diet

IV. DEVELOPING MANAGEMENT SKILLS

A. Meal planning
1. Balancing nutrient content
2. Using shopping skills
3. Using food guides

B. Preparation skills
1. Energy and efficiency of homemaker
2. Time management
3. Equipment use

C. The food budget

D. Energy conservation

E. Serving the meal
1. Table settings
2. Table service
3. Table courtesy
4. Quality of the food

F. Home preservation of foods

G. Management skills in menu planning
1. Cooking for one or two
2. Meals for dual-career families
3. Family meals

V. NUTRIENT NEEDS THROUGHOUT THE LIFE CYCLE

A. Weight control and diet
1. Finding ideal weight
2. Overweight
3. Underweight
4. Dieting
a. Poor weight control methods
b. Sensible weight control methods
5. Diet and exercise

B. Nutrition and growth
1. Food and nutrition during pregnancy
a. Special nutrient needs
b. Nourishment of fetus
c. Weight control
2. Feeding the young child
a. Feeding infants
b. Introducing solid foods
c. Feeding the child from 1 to 3 years
d. Effects of good and poor nutrition in the very young
e. Nutrient needs in middle childhood
3. Special needs of the adolescent
a. Increased needs for nutrients
b. Changes in the adolescent; a good self-image
c. Nutrition and athletics
4. Contribution of school and food service programs
a. School lunch and breakfast programs
b. Other government programs

C. Nutrition and aging
1. Nutrient needs
2. Factors affecting food choices
3. Nutrition for the elderly
4. Special programs for the elderly

D. Nutrition during illness, convalescence, and long-term health problems
1. Diabetes
2. Other health conditions

VI. WORLD NUTRITION

A. Worldwide nutrition problems

B. Relation to world food supply

C. Possible solutions
1. New sources of food
2. Increasing world food supply
3. Population control
4. Social concern and responsibility

VII. GOURMET MEALS

_____ A. Characteristics of food

_____ B. Foods from other cultures

_____ C. Special occasion meals

VIII. CAREERS IN FOOD AND NUTRITION TODAY AND IN THE FUTURE

_____ A. Careers in the food service industry

_____ B. Opportunities for dietitians and nutritionists

_____ C. Other related careers

COMMENTS

1. If there were a semester course in Foods and Nutrition, do you anticipate any specific problems? Please list.

2. Additional comments:

3. List and describe the three (3) most effective teaching strategies you have used in teaching Foods and Nutrition. Include teaching at all levels, including adults.

   Example: In my Homemaking I class, I taught the importance of good nutrition by using rats to show effects of diet. Four rats were obtained from the biology department. Committees were formed to plan the diets. One pair ate snack foods while one ate cafeteria food. At the end of six weeks, there was a noticeable difference. Each student wrote a paragraph explaining the differences. After the project, the poorly fed rats were restored to health with a proper diet. The rats were awarded to the student who wrote the best paper (with parents' permission).

   (We would welcome a lesson plan; please attach to this data.)

4. List and describe the three (3) most effective laboratory experiences you have used in teaching Foods and Nutrition. (Please continue on back of page.)

Thank you for assisting in this project by sharing your ideas and your time!

APPENDIX B

CONCEPTUAL FRAMEWORK

FOODS AND NUTRITION - SEMESTER COURSE

SECONDARY EDUCATION

I. FOOD, NUTRITION, AND LIFE STYLE

A. Eating patterns of individuals and groups
   1. Physiological factors for eating
   2. Psychological and social influences
   3. Influence of culture on eating patterns
   4. Economic factors

B. Contemporary eating patterns in the U.S.
   1. Meal patterns for active families
      a. Convenience foods
      b. Fast foods
      c. Restaurant foods
   2. Influence of advertising and marketing on food choices
   3. Nutritional effects of contemporary food patterns and influences
      a. Synthetic and substitute foods
      b. Engineered foods
      c. Excesses of sodium, fat, sugar, and additives
   4. Acceptance of new foods
   5. Comparison of conventional, convenience and fast foods.
      a. Preparation time
      b. Cost
      c. Nutritional quality
      d. Label information

C. Food preparation tools in the contemporary kitchen
   1. Tools
   2. Small equipment
   3. Major equipment
   4. Microwave and convection ovens
   5. Safety in the use of equipment

D. Food safety and sanitation
   1. Effects of food handling in the home
   2. Processing and marketing techniques which assure quality and safety
   3. Danger, concerns, and benefits
      a. Bacteria
      b. Pesticides
      c. Additives
   4. Control of food contamination

E. Food fads, fallacies and facts
   1. Fad diets
   2. Food and nutrition quackery
      a. "Organic and natural" foods
      b. Health foods
   3. Sources of information
   4. Evaluation of supplements

II. YOUR FOOD AND YOUR NUTRITION

A. How a body uses food
   1. Digestion
   2. Absorption
   3. Metabolism

B. The balanced diet
   1. RDA's for healthy people
   2. Caloric requirements
   3. Nutrient functions
      a. Carbohydrates
      b. Fats
      c. Protein
      d. Vitamins
      e. Minerals
      f. Water
   4. Sources of nutrients
      a. Milk
      b. Meats and meat substitutes
      c. Vegetables and fruits
      d. Grains
      e. Fats
      f. Sweets
   5. Meal patterns
      a. Alternate sources of nutrients
      b. Planning for individuals and families
         1) Nutrients and calories
         2) Color, texture, and shape of food
      c. Snacks
   6. Effects of good and poor nutrition

C. Personal food choices
   1. Factors affecting individual requirements
      a. Height and weight
      b. Age and sex
      c. Activity
      d. Energy needs for size and age
   2. Nutrients for personal growth and performance (RDA's)
   3. Food guides for personal choices
   4. Fitting individual needs into family meal plans
   5. Developing menus

III. MANAGING FAMILY MEALS

A. The kitchen laboratory
   1. Cooking terms
   2. Measuring techniques
   3. Recipe use
   4. Time schedules

B. Fruits and vegetables in meals
   1. Nutrient sources, functions, and requirements
      a. Vitamin C
      b. Vitamin A
      c. Iron
      d. Calcium
   2. Vegetarian diets
   3. Shopping for fruits and vegetables
      a. Selection guidelines
      b. Various forms
      c. Storage
   4. Preparation of fruits and vegetables
      a. Principles of cookery
         1) Retaining nutrients
         2) Color changes
         3) Methods of cooking
         4) Seasoning
      b. Preparing salads
         1) Principles of preparation
         2) Salad dressings

C. Milk and milk products in family meals
   1. Nutrient function, sources, and requirements
      a. Calcium
      b. Riboflavin
      c. Protein
      d. Vitamin D
   2. Forms of milk
   3. Milk products
   4. Using milk and milk products
   5. Cheese and cheese products
   6. Using cheese
   7. Principles of cookery

D. Meat and eggs for the family
   1. Nutrients in meats, fish, poultry, and eggs
      a. Protein
      b. Iron
      c. B vitamins
   2. Uses of eggs in cookery processes
   3. Principles of meat cookery
   4. Buying and storing meats and eggs
   5. Meal plans using meats, fish, poultry, and eggs

E. Grains in family meals
   1. Nutrients in grains

a. Carbohydrates
b. Complementary proteins
c. Iron
d. Thiamin

2. Variety of grains in meals
3. Baking with flour
   a. Quick breads
   b. Yeast breads
   c. Desserts
4. Cooking pasta and other cereal products
5. Buying and storing grain products
6. Using grain products in meal preparation

F. Sugar in the diet
   1. Energy value
   2. Uses in meals and snacks
   3. Variety of forms
   4. Sugar and health
      a. Weight control
      b. Tooth decay
      c. Related illnesses

G. Fat in the U.S. diet
   1. Classification of fats
   2. Food sources of types of fats
   3. Functions of fat in the body
   4. Cholesterol
   5. Fats, cholesterol, and heart disease
   6. Storing and cooking with fats
   7. Uses of fats in meals

H. Beverages
   1. Sources of nutrients and calories
   2. Water in the diet

IV. DEVELOPING MANAGEMENT SKILLS

A. Meal planning
   1. Balancing nutrient content
   2. Using shopping skills
   3. Using food guides

B. Preparation skills
   1. Energy and efficiency of homemaker
   2. Time management
   3. Equipment use

C. The food budget

D. Energy conservation

E. Serving the meal
   1. Table settings
   2. Table service

3. Table courtesy
4. Quality of the food

F. Home preservation of foods

G. Management skills in menu planning
1. Cooking for one or two
2. Meals for dual-career families
3. Family meals

V. NUTRIENT NEEDS THROUGHOUT THE LIFE CYCLE

A. Weight control and diet
1. Finding ideal weight
2. Overweight
3. Underweight
4. Dieting
a. Poor weight control methods
b. Sensible weight control methods
5. Diet and exercise

B. Nutrition and growth
1. Food and nutrition during pregnancy
a. Special nutrient needs
b. Nourishment of fetus
c. Weight control
2. Feeding the young child
a. Feeding infants
b. Introducing solid foods
c. Feeding the child from 1 to 3 years
d. Effects of good and poor nutrition in the very young
e. Nutrient needs in middle childhood
3. Special needs of the adolescent
a. Increased needs for nutrients
b. Changes in the adolescent; a good self-image
c. Nutrition and athletics
4. Contribution of school and food service programs

C. Nutrition and aging
1. Nutrient needs
2. Factors affecting food choices
3. Nutrition for the elderly
4. Special programs for the elderly

D. Nutrition during illness, convalescence, and long-term health problems

VI. CAREERS IN FOOD AND NUTRITON TODAY AND IN THE FUTURE

A. Careers in the food service industry

B. Opportunities for dietitians and nutritionists

C. Other related careers

APPENDIX C

SUPPLEMENT TO

FOODS AND NUTRITION

CURRICULUM GUIDE

Laboratory Experiences
Demonstrations
Exhibits

Patsy Hallman, Ph. D.
Sue Jones, Ph. D.

Stephen F. Austin State University

*SUGGESTIONS FOR POSSIBLE LABORATORY EXPERIENCES

FOODS AND NUTRITION CLASS

MAJOR CONCEPT	COMPETENCIES	LABORATORY
Eating Patterns	1. Determine factors affecting food choices. 2. Read and follow label directions. 3. Determine contribution convenience foods make to nutritional needs, cost, time energy, and family acceptability. 4. Develop awareness of convenience foods available. 5. Develop skill in use of simple kitchen appliances 6. Use table setting skills.	Convenience Foods **Sample Menu: Frozen Chicken Sticks Frozen Peas Instant Rice Sliced Bread Margarine Water
Contemporary Foods	1. Classify contemporary foods. 2. Develop skill in using measuring tools. 3. Determine nutritional value in measured portions of food. 4. Compare caloric content of types of food. 5. Compare cost, time and palatability of foods.	Comparison of Conventional, Convenience and Fast Foods French Fries Lemonade
Food Safety and Sanitation	1. Recognize sources of food contamination. 2. Explain practices necessary for food safety.	Bacterial Growth in Foods Press finger to agar plate after touching the following: Counter tops Improperly cleaned utensils Face Hair Prepare one plate with just-washed hands. Label, cover, and store at room temperature for 48 hrs. Inspect and review rules for sanitation.

* No class will have resources for all these experiences. A teacher should choose those most appropriate for the class.

** The examples shown may not fit the needs and interests of all classes. Teachers and students may choose different menus which are similar in content.

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
Display/demonstrate types of convenience foods. Give instructions on reading and following label directions. Simple table setting	None	Student 1: Prepare chicken sticks Student 2: Prepare peas Student 3: Prepare rice Student 4: Set table with bread, butter and water
Measuring Weighing Computing cost of foods	None	Each student group prepares french fries and lemonade in a different form: fresh, frozen, fast food. Compare and evaluate in groups before eating.
Proper storage techniques for various foods. Proper cleaning of utensils and appliances.	None	

MAJOR CONCEPT	COMPETENCIES	LABORATORY
Food Fads and Fallacies	1. Determine characteristics of fad diets. 2. Evaluate fad diets. 3. Determine caloric content of fad diets	Fad Diet Beverly Hills Diet (Fruit only) OR Cambridge Diet (Powdered mix)
Health Foods	1. Compare nutritional value and cost of same foods from health store and supermarket. 2. Analyze nutritional claims of health foods.	Foods from Health Stores and Supermarkets (Exhibit only) Salt, dry milk, flour, peanut butter, cereal, salad oil
Nutritious Snacks	1. Determine the nutritive value of favorite snacks. 2. Distinguish between nutritive snacks and empty kilocalorie snacks. 3. Develop a taste for nutritive snacks. 4. Use small appliances in preparing snacks.	Nutritious Snacks Fruit/Cheese Platter Peanut Butter/Cereal Bars Milkshakes
Individual Nutrient Needs	Determine individual nutrient needs based on sex, size, age, activity.	Factors Affecting Nutritional Needs Measure height Weigh Pinch test Activity level
Fruits	1. Determine nutritional value of different kinds of fruit. 2. Determine nutritional value of different forms of the same fruit. 3. Plan a variety of ways to include fruit in meals and snacks. 4. Prepare fruits in various forms: peeling, paring, stewing, congealed dishes.	Fruit Salad Buffet Fresh Fruit Salads Hot Canned Fruit Soup Jello Salads with Frozen Fruit Stewed Fruit Crackers Water
Vegetables	1. Determine nutritional value of different vegetables. 2. Determine nutritional value of different forms of the same vegetable. 3. Plan a variety of ways to include vegetables in meals and snacks.	Vegetable Buffet Baked Beans Buttered Carrots Scalloped Potatoes Raw Vegetable Tray Cracked Wheat Bread Water

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
None	None	Prepare one meal from a day's menu of the fad diet chosen. Use Basic 4 to analyze. Suggest low calorie foods to improve nutrition. Determine caloric content.
None	None	In groups, determine nutritive value and cost of products from health food store and supermarket. Prepare and display a chart showing the results.
Milk Drinks - Use small appliances in preparing: blender, toaster oven, mixer, grill, etc.	None	Student 1: Prepare fruit Student 2: Prepare shake Student 3: Prepare bars Student 4: Assist with bars
Demonstrate pinch test, measuring and weighing techniques.	None	In groups of two, measure and weigh. Determine activity level and recommended weight for height.
Reading recipes Preparing raw fruits Gelatin salad preparation Dried fruits	None	Student 1: Prepare fresh fruit salad Student 2: Prepare fruit soup Student 3: Prepare gelatin salad Student 4: Prepare stewed fruit; set table
Methods of preparing vegetables: a. Steamed b. Scalloped c. Stir Fried d. Canned Variety of ways to conserve nutrients	Prepare beans for baking Prepare potatoes for oven (Teacher places beans and potatoes in oven prior to laboratory)	Student 1: Prepare carrots Student 2: Bake beans, set table Student 3: Prepare scalloped potatoes; help student 4 Student 4: Prepare raw vegetable tray

MAJOR CONCEPT	COMPETENCIES	LABORATORY
Vegetables (continued)	4. Prepare vegetables in various forms. 5. Practice conservation of nutrients in preparing vegetables.	
Green Salads	1. Determine nutritive value of salad vegetables. 2. Review storage of fresh vegetables. 3. Prepare salad greens and other fresh vegetables. 4. Use a variety of ingredients in making salads.	Salad Luncheon Green Salads Crackers Iced Tea
Milk Dishes	1. Compare nutritive value of different forms of milk. 2. Use different forms of milk. 3. Use principles of milk cookery. 4. Use thickening in preparing milk dishes.	Milk in Meals Cream Soup Puddings Hot Chocolate Toast Strips
Cheese in the Diet	1. Determine the nutritive value of cheese. 2. Distinguish among types of cheeses. 3. Discuss cooking techniques and uses in the diet.	Cheese Tasting Event Variety of Cheeses: Cheddar, Gouda or Edam, Swiss, Mozzarella, etc. Crackers
Protein in Breakfast Meals	1. Use various sources of protein in breakfast meals. 2. Use skills in preparing eggs, cereals, and meats for breakfast meals. 3. Practice acceptable table manners.	Breakfast Fruit Cup Eggs/Omelette Sausage/Bacon Toast, Butter Coffee
Meat Substitutes	1. Determine nutritive contribution of meat substitutes. 2. Value meals without meats. 3. Prepare cream sauce. 4. Review principles of protein cookery. 5. Prepare tea properly. 6. Use principles of pasta cookery.	Meatless Meals Macaroni and Cheese OR Creamed Eggs on Toast Salad of Choice Hot Tea

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
Preparation of salad vegetables	None	Students 1 & 2: Prepare coleslaw with carrots, onion and peppers. Students 3 & 4: Green salad with endive, romaine and iceberg lettuce; green onions, cucumbers and radishes
Use of different forms of milk in food preparation: vanilla pudding, cream soup, hot milk drinks Variety of uses for simple puddings Different types of thickening agents: egg, flour, cornstarch	None	Student 1: Prepare soup Student 2: Prepare pudding Student 3: Prepare drinks Student 4: Prepare toast strips, set table (Other groups may choose different flavors of soup, pudding, and drink.)
Cheese cookery: cheese sauce - show techniques of cooking and various uses.	None	None
Egg Cookery Variety in breakfast foods (Supplementary protein such as cereal with milk, cheese, etc.) Cooked cereals	None	Student 1: Prepare meat Student 2: Cook eggs Student 3: Prepare fruit cup Student 4: Prepare toast and coffee
Brewing tea Making cream sauce Preparing pasta	None	Students 1 & 2: Prepare macaroni and cheese Students 3 & 4: Prepare salad and tea

MAJOR CONCEPTS	COMPETENCIES	LABORATORY
Meat in Meals	1. Determine nutritive value of meat, fish or poultry. 2. Use meat cooking skills. 3. Distinguish between high and low fat forms of meats.	Simple Family Meals Broiled or Baked Chicken Steamed Vegetable Convenience Bread Iced Tea
*Quick Breads	1. Determine contributions of breads to the diet. 2. Use preparation skills to prepare batters and doughs. 3. Compare time, cost and palatability for different types of quick breads. 4. Identify characteristics of standard product.	Quick Breads Muffins Biscuits Butter/Jelly Water
Yeast Breads	1. Develop skills in preparing yeast bread. 2. Review variations in the preparation of yeast bread. 3. Review the contribution of breads to the diet. 4. Identify the characteristics of standard yeast breads.	Yeast Breads Yeast Bread Butter Spiced Tea
Cake Baking	1. Compare various methods for preparing cakes. 2. Develop skills in conventional cake-making techniques. 3. Determine the nutritive value of cakes 4. Consider the difference in caloric value of various icings and toppings.	Cake Baking Butter Cake Milk Drink
Time-saving Meals	1. Prepare nutritious meals in limited time (25 minutes). 2. Rate acceptability of meal. 3. Review table setting rules for Blue Plate Service. 4. Review table manners. 5. Use principles of work simplification and time management.	Quick Meals Microwave Beans with Weiners Frozen Greens Brown 'n Serve Rolls Ice Cream Sundaes Water

* May be divided into two laboratory experiences.

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
Broiling Braising Roasting	None	Students 1 & 2: Prepare chicken Students 3 & 4: Prepare vegetable and tea
Prepare breads from both batters and doughs.	None	Students 1 & 2: Prepare ½ recipe of biscuits/muffins Students 3 & 4: Same
Yeast breads (A second demonstration may show variations.)	Prepare dough	Students 1 & 2: Prepare ½ recipe of yeast bread Students 3 & 4: Same
Conventional cake preparation (Demonstrate sponge cakes at conclusion of butter cake lab.) Icing a cake	Bake cake with each two students preparing one layer.	All four students ice cake.
Use of microwave oven and other time-saving appliances and techniques	None	Student 1: Prepare beans and weiners Student 2: Prepare vegetable Student 3: Prepare rolls; set table Student 4: Prepare dessert

MAJOR CONCEPT	COMPETENCIES	LABORATORY
Low Income Meals	1. Prepare nutritious low cost meal. 2. Rate acceptability of meal. 3. Review table setting rules for Family Service. 4. Use principles of time management.	Low Cost Meals Tuna/Rice Casserole Green Beans Coleslaw Quick Bread Fruit in Season Iced Tea
Meals for Special Groups	1. Modify meals to meet special needs of individual family members: child, elderly, pregnant, ill, or individual with health problem. 2. Verify nutritional adequacy of meals. 3. Identify similarities as well as differences in individual needs.	Exhibit for Special Needs Using food models, show a meal with variations planned for individuals with special needs: Elderly Young child Pregnant woman Diet for hypertension or heart disease, etc.
Food Preservation	1. Compare nutritional value of foods preserved in different manners. 2. Package foods for freezing. 3. Label freezer foods. 4. Make time charts for use of frozen foods. 5. Prepare raw foods for freezing.	Freezing Foods Fresh Fruit Fresh Vegetables Leftovers
Weight Control	1. Develop calorie-controlled menus for weight loss or weight gain. 2. Plan exercises for weight control.	Weight Control Clinic Plan a diet and exercise clinic. Develop sample menus appropriate for teens. Prepare handouts on diet and weight. Work with school nurse and P.E. teacher to develop exercises. Set up a weekly session for participants.
Nutrition of Food Away from Home	Evaluate menus for contribution to daily dietary needs.	Food Away From Home Using food models, prepare an exhibit of a typical meal from the following: a. School cafeteria b. Fast food restaurant c. Foreign food restaurant d. Gourmet restaurant

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
None	None	Student 1: Cook casserole; set table Student 2: Make bread Student 3: Prepare coleslaw Student 4: Prepare beans and fruit
None	None	Group I: Elderly Group II: 2-year-old Group III: Pregnancy Group IV: Heart disease patient
Blanching Enrichment: jelly making	None	Students 1 & 2: Prepare fruit Students 3 & 4: Prepare vegetables
Exercises for specific purposes.	Preparation of menus, handouts, forms, etc.	Weigh-in session Exercise session Provision of information on diet
None	None	Each group should prepare an exhibit from a different type of restaurant. Prepare an evaluation of contributions to dietary needs.

MAJOR CONCEPT	COMPETENCIES	LABORATORY
Foreign Foods	1. Accept new foods. 2. Appreciate foods from other cultures.	Foreign Food Taste Event After a study of foods from other countries, select one dish to prepare for a foreign food tasting event.
Regional Foods	1. Accept new foods. 2. Appreciate a variety of foods from the U.S.	Regional Food Taste Event After a study of foods from various regions of the United States, select dishes representing specific regions to prepare for a tasting event.
Food Substitutions	Develop skill in substituting available foods for unobtainable ones.	Exhibit of Food Substitutions Prepare an exhibit of food substitutions. Examples: Grapefruit juice for orange, Buttered rice for mashed potatoes, Cole slaw for lettuce salad, Lite cheese for milk
Nutrients and Their Functions	1. Recognize major nutrients and their food sources. 2. Determine functions of major nutrients. 3. Develop communication skills 4. Verify accuracy of nutrition information.	Nutrition Skit Students prepare a skit with script and costumes. Foods or nutrients are the actors and they tell their functions and sources. Present the skit to another class or at an elementary school.
Recommended Dietary Allowances	1. Determine RDA's for adolescent boy and girl. 2. Compare RDA's for various age groups. 3. Determine foods which supply RDA's	Recommended Dietary Allowances Using food models and comparison cards (available from Dairy Council), plan a day's diet for an adolescent boy and girl. Make into a display.
Fat and Cholesterol in the Diet	1. Identify foods high in fat. 2. Identify foods with hidden fat. 3. Enumerate different characteristics of fats containing saturated and unsaturated fatty acids. 4. Identify common sources of cholesterol in diet.	Display on Fats Arrange a display of foods containing fat (include foods with hidden fat). Include some uncooked meats so that differences in fat can be noted and saturation of fatty acids discussed. Use books and charts to determine amount of fat in

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
None	None	Each group prepares one dish representing a foreign country.
None	None	Each group prepares one dish representing a specific region of the United States.
None	None	Each group should contribute foods to the exhibit, providing labels showing nutrient similarities and differences in suggested substitutes.
None	Plan skit Make costumes Write script	Perform skit for a group.
None	None	Each group should determine the nutrient level in a day's diet for two different nutrients. (Include all key nutrients: protein, Ca, iron, vitamin A, vitamin c, thiamin, niacin, riboflavin, and kcal.)
None	None	Make a display. Group foods by saturated or polyunsaturated fatty acid content. (The firmer the fat, the more saturated the fatty acids.)

CONCEPT	COMPETENCIES	LABORATORY
Fat and Cholesterol in the Diet (continued)	5. Determine high caloric contribution of fat to the diet. 6. Review the relation of dietary fat to heart disease. 7. Classify foods as contributors of saturated or polyunsaturated fatty acids.	foods shown and kcal. from fat. Group foods by content of mostly saturated fats or mostly unsaturated fatty acids.
Carbohydrate Foods	1. Identify foods which contain carbohydrates. 2. Classify carbohydrate in foods as complex carbohydrate, natural sugar, or refined sugar. 3. Determine fiber content of some carbohydrate foods. 4. Compare nutrient density of snack foods containing carbohydrates, including favorite snacks of class members. 5. Prepare nutritious snacks containing carbohydrates.	Snack Foods Containing Carbohydrates Suggested menu: Cheese and Crackers Texas Trash Vegetable Sticks Fresh Fruit with Cream Cheese Dip Fruit Punch
Foods Containing Sodium	1. Identify foods high in sodium. 2. Identify foods with similar nutritive value, but low in Na. 3. Compare Na content by reading labels and charts.	Sodium in Foods Plan a display or tasting session with foods high and low in sodium. Examples: Low Na: Vegetable sticks, Fruit, Chicken salad, Toast strips, Fresh peanuts High Na: Potato chips, Salted nuts, Corn chips, Cold cuts, Pickles, Olives

TEACHER DEMONSTRATIONS	PRE-LAB WORK	STUDENT TASKS
None	None	Each group of two students should prepare a different snack food. Compare and evaluate for nutritional content.
None	None	Each group prepares one high and one low sodium foud. Find the sodium content of each and discuss with the class.

FOODS AND NUTRITION SEMESTER COURSE

NOTES TO TEACHERS

1. The instruction which students receive in the Foods and Nutrition course may be the only formal education they will ever have in foods and nutrition. Plan for essential learning experiences.

2. Instruction in nutrition should be a part of each experience planned for Foods and Nutrition classes. Laboratory experiences should be used to build nutrition concepts and food preparation and management skills. These experiences should be interspersed throughout the course. The teacher should avoid separation of instruction in nutrition from that of food preparation.

3. Priorities for necessary principles which must be taught should be set before laboratories are planned.

4. Each laboratory experience should be evaluated in terms of basic behavioral objectives which will be reached for each student who participates. For example, if four students are in a group and only one has the experience of kneading dough, then only one student will develop the skill of preparing dough properly. The other students missed the experience. Can a teacher afford to teach skills to only one-fourth of the students?

5. Students who enter a Foods and Nutrition class are very anxious to cook. Capitalize on that motivation! However, there are many interesting and exciting experiences with foods which do not involve cooking. Be enthusiastic about those as well. Nutrition concepts should be an integral part of every laboratory experience.

6. Integrate concepts which require short periods for development as multiple activities surrounding the laboratory. For example, teach table manners along with vegetable cookery, safety along with meat cookery, etc.

7. Each member of a "laboratory family" should have some food preparation responsibility during each laboratory experience.

8. In deciding whether each "laboratory family" is to prepare the same product in a laboratory experience, be guided by the objectives for the class. If the objectives are to develop a specific principle, then each must prepare the same type of food; if the objective is to see variety available within a certain category, then different laboratory units may prepare different foods. For example, if one skill to be acquired is proper handling and preparation of salad greens, then each student group must prepare a green salad. If, on the other hand, the objective is to see variety in salads, then each group may prepare a different type of salad, i.e., tossed, gelatin, meat, etc.

9. In selecting food experiences, select those which build basic skills and competencies. For example, instead of using a laboratory on "Angel Biscuits" (a combination quick-yeast bread) students should master both quick breads and yeast breads.

10. Demonstrate a food preparation technique before each laboratory experience. Remember, if students already know how to prepare a food, it should not be used as a laboratory experience. If students do not know the skill, a demonstration will better ensure their acquiring the skill.

11. Follow a demonstration with individual student experiences. These do not have to be laboratory experiences, although they may be.

12. When giving a demonstration, provide each student with a copy of the instructions used.

13. In order to have essential information available for multiple lessons, post for the entire semester a calorie chart and a Basic 4 food guide.

14. Collect food containers of all possible types of food (cans, boxes, jars, bottles, labeled sacks, etc.). Use in exhibits suggested for developing many concepts.

15. Food models are strongly recommended for use in a variety of exhibits and learning experiences. These are available in cardboard models or in more expensive food facsimiles.

16. The teacher with a limited budget may include valuable experiences by practicing some of the following suggestions:
    a. Have students prepare exhibits using food models instead of preparing actual foods for classes in which objectives relate to nutrition concepts.
    b. Use low cost foods when possible. For example, cabbage slaw instead of tossed green salad, green beans instead of broccoli, meat patties instead of pork chops, plain cake instead of chocolate cake.
    c. Demonstrate food preparation skills instead of having laboratories.
    d. Have tasting events instead of food preparation laboratories.
    e. Limit the number of laboratory experiences to those needed for developing only the basic foods and nutrition concepts.

17. Planning prior to the beginning of the course is absolutely essential for effective use of resources, i.e., time, money, etc.

18. The major learning from laboratory experiences may well be the experiences which follow the laboratory. For example, after an experience of preparing a meal of convenience foods, the teacher should follow with activities similar to the following:
    a. Show the contributions the foods make toward the daily nutritional needs of an average teenager.
    b. Make a chart showing differences in cost, time, and energy of the convenience foods as compared to conventional foods.
    c. Make recommendations for ways in which convenience foods may be included in a family's regular meal patterns.

    Evaluations which follow laboratory experiences should be much broader than just checking for quality of product and efficiency in preparation.

APPENDIX D

MAJOR CONCEPTS TREATED IN TEXTBOOKS
AVAILABLE FOR STATE ADOPTION IN TEXAS IN 1982

	Medved (12)	Shank et al (16)	White (20)	Cronan & Atwood (3)	Down & Pisesky (4)	Largen (10)	Largen (9)	Newberry & Fisher (13)
CONCEPTS:								
I. FOOD, NUTRITION AND LIFE STYLE								
A. Eating patterns - individual, group	(*)	*	*	*	*	*	*	*
B. Contemporary eating patterns in the U.S.	*	*	*		*			*
C. Food preparation tools	*	*	*	*	*		*	*
D. Food safety and sanitation	*	*	*	(*)	*	*	*	*
E. Food fads, fallacies, facts		*	*		*	*		*
II. FOOD AND NUTRITION								
A. How the body uses food	(*)	*	*		(*)	*	*	*
B. The balanced diet	*	*	*	(*)	*	*	*	*
C. Personal food choices		*	(*)		*			*
III. MANAGING FAMILY MEALS								
A. The kitchen	*	*	*				*	*
B. Fruits and vegetables	*	*	*	*	*		*	*
C. Milk and milk products	*	*	*	*	*		*	*
D. Meat and eggs	*	*	*	*	*		*	*

* Concept treated in text

(*) Minimal attention given to concept

	Medved (12)	Shank et al (16)	White (20)	Cronan & Atwood (3)	Down & Pisesky (4)	Largen (10)	Largen (9)	Newberry & Fisher (13)
E. Grains	*	*	*	*	*		*	*
F. Sugar in the diet	(*)	*	*	(*)			(*)	
G. Fat in the diet	*	*	*	(*)	*	*	*	*
H. Beverages	*	*						
IV. DEVELOPING MANAGEMENT SKILLS								
A. Meal Planning	*	*	*	*	*	*	*	*
B. Preparation skills	*	*	*	*	*		*	*
C. The food budget	(*)	*	(*)	(*)	*	(*)	(*)	(*)
D. Energy conservation		*			*			(*)
E. Serving the meal	*	*	(*)	*			*	*
F. Home preservation of foods	*	*			(*)		*	*
G. Management skills in menu planning	(*)	*	*	*			*	*
V. NUTRIENT NEEDS THROUGHOUT THE LIFE CYCLE								
A. Weight control and diet	(*)	*	*	*	*	*	*	*
B. Nutrition and growth	(*)	*	*	(*)	*	*	*	
C. Nutrition and aging		*	*		(*)	*	*	
D. Nutrition during illness, convalescence, and long-term health problems		*	*					(*)

	Medved (12)	Shank et al (16)	White (20)	Cronan & Atwood (3)	Down & Pieseky (4)	Largen (10)	Largen (9)	Newberry & Fisher (13)
VI. WORLD NUTRITION								
A. Worldwide nutrition problems			(*)	(*)				*
B. Relation to world food supply	*		(*)	(*)				*
C. Possible solutions	*	(*)	(*)					*
VII. GOURMET MEALS								
A. Characteristics of food		(*)	*					
B. Foods from other cultures	*	(*)	(*)	(*)			*	*
C. Special occasion meals		*	*	*	(*)		*	*
VIII. CAREERS IN FOOD AND NUTRITION								
A. Careers in the food service industry	*	*	*	*	(*)	*	*	*
B. Opportunities for dietitians and nutritionists	*	*	*		(*)	*	*	*
C. Other related careers	*	*	*	*	(*)	*	*	*
ADDITIONAL TOPICS:								
A. Sources of food					(*)			
B. Growing own food								(*)